

**Service: Multi-Protocol Label Switching (MPLS) - Managed****Service Line:** Network Communications**Status:** Available**General Description:**

Multi-Protocol Label Switching (MPLS) is a data transport method that allows customers to connect to the GTA mainframe, directly to customer's data center, the Internet, and other applications to conduct state business. This service is stable, reliable, secure and flexible. It is a fully meshed network in compliance with the latest convergence technology. It is scalable to any office's size and needs, and it accommodates various access methods such as Frame Relay, DSL, Metro Ethernet, Private Line and ISDN.

MPLS is a managed service that includes:

- Connection to the fully meshed network
- Network router
- Availability 24 hours a day, 7 days a week, 365 days a year for monitoring, help desk support and technology refresh

The basic design of the MPLS network allows each customer's data traffic to travel a Virtual Private Network (VPN) path from the point of entry into the network to the final destination. Customers can control which of their offices are allowed to communicate with other customer offices and those that must maintain complete separation. MPLS VPNs will direct data traffic to specific applications hosted by GTA or the customer's data center. Data traffic to GTA's Internet service will be channeled to GTA's firewalls. The architecture is designed to provide increased performance, flexibility, security and scalability, while providing the end user with seamless connectivity to the network.

The MPLS network is designed and constructed to accommodate data, voice (VoIP), multimedia and video over the same access circuit. One MPLS option allows Quality of Service (QoS) tagging to prioritize traffic type based upon customer specifications and needs. The customer is GTA's partner in determining the final design of its network based on its financial and technical needs. As the customer's requirements change, so can its network, with minimal disruption and expense.

**Service Level Targets:**

MPLS is designed for 99.999% accuracy at the core. A four-hour mean time to repair (MTTR) is standard practice for Frame Relay, Metro Ethernet, ISDN, and DSL. (See "Service Level Objectives" in "Other Information.")

**Availability:**

- 24 hours a day, seven days a week, 365 days a year
- Basic Service Level Support, remote routine or on-site repair: 6:30 a.m. – 6 p.m. Monday–Friday; 24 hours for network support services

- Statewide

**Limitations:** N/A

**Prerequisites:**

GTA engineers must conduct a site survey to determine local needs, followed by a design session with the customer.

**Pricing / Charges:**

Please contact the GTA Office of Solutions Marketing at 404-651-6964 or [gtasolutionsmrktg@gta.ga.gov](mailto:gtasolutionsmrktg@gta.ga.gov) to be put in touch with your GTA Account Manager, who will obtain specific pricing for your requirements. Charges depend on the access method selected and other technical factors, including bandwidth requirements and customer-specific access needs. Pricing will be quoted as a fixed monthly charge based on the access circuit type and service level.

**Service Components or Product Features Included in Base Price:**

- Choice of access circuit connectivity type
- Managed router services
- Installation support
- 24 x 7 Network Operations and Security Center support
- Capacity and performance management
- Centralized alarm and alert management
- Change and configuration management
- Problem and incident management
- Data transport and delivery security compliance
- MTTR (mean time to repair) guarantees
- Periodic access circuit review

**Options Available for an Additional Charge:**

- Quality of Service (QoS)
- Dual port router
- Redundant access circuit
- Loss of primary service address
- Managed firewall service

**Service Components or Product Features Not Included:**

- Customer-specific centralized firewall services
- VPN encryption

**What GTA Provides:**

- GTA MPLS managed network connections
- On-premise hardware
- Secure Internet services
- VLANS
- Network access control lists
- Network Operations and Security Center: network management tools, ordering and provisioning tools
  - This support is designed to assist the customer with ordering, trouble reporting and tracking as well as network access performance verification.

Additionally, GTA will be responsible for:

- Coordinating on-site equipment installations and circuit activations
- Tracking of all MPLS equipment on customer's premise
- Tracking upgrades, patches and licenses consistently to achieve the service level objectives
- Tracking all open trouble tickets and reporting status of issues back to the customer
- Network performance tuning, monitoring and troubleshooting of the customer's on-premise equipment as well as network equipment
- Performing incident, change, problem, and request management reporting and tracking.
- Coordinating service requests with other GTA support teams
- System and security auditing - ensuring that the MPLS network complies with current GTA enterprise security policies and those defined by the customer as defined in the initial security assessment
- Monitoring of alarms, alerts and performance degradation
- Monitoring access circuit capacity planning and network system growth
- Managing requests for moves, adds, changes and deletions to managed services
- Managing all vendor Service Level Agreements and remedies on behalf of all customers
- Developing communications related to changes to the MPLS network that may affect the customer's operating environment; gaining approval from customer management before changes are implemented

**What the Customer Provides:**

- Input on overall operations needs and requirements including number of users per site, bandwidth requirements (if known), security requirements, growth estimates, traffic destinations and on-site contact information
- A secure and environmentally sound equipment room

Additionally, the customer will be responsible for:

- Maintaining all pertinent business case approvals

- Providing customer escalation and notification paths and contact information for communicating about incidents associated with the application
- Designating an owner and appropriate team members responsible for participating in design sessions.
- Providing capacity planning requirements (trends, new requirements, etc.) on a quarterly basis
- Ensuring that the network equipment room meets the minimum recommended hardware prerequisites to install and run a network router
- Providing free and clear access to network equipment room
- Payment of all monthly recurring charges for MPLS circuits and out-of-band management lines

#### **Joint responsibilities (GTA and Customer):**

Customer and GTA will work together to:

- Participate in initial design sessions and technology refresh sessions on a quarterly basis, or as needed
- Participate on a monthly basis, or as needed to discuss operational issues
- Initiate escalation to the next level of management in the event of any dispute regarding this service if a resolution at the lower level cannot be achieved
- Initiate and maintain regular, mutual communications about changes affecting the customer's operating environment

#### **Service Support:**

- Access available 24 hours a day, seven days a week, 365 days a year to GTA Network Operations and Security Center: 404-463-3600
- MPLS Remote DSL Help Desk available 6:30 a.m. – 6:00 p.m.: e-mail [GTAServiceDesk@gtga.ga.gov](mailto:GTAServiceDesk@gtga.ga.gov) or call 404-749-2150
- Installation coordination and issue resolution
- Access available 24 hours a day, seven days a week, 365 days a year for circuit and network monitoring
- Service reviews

#### **Service Issue Escalation:**

GTA offers service issue escalation in support of MPLS managed network services. GTA has established escalation procedures and corresponding contacts for all issues pertaining to the delivery of superior service to its customers (see table below). GTA operates "24 x 7" support

and offers level-one and level-two (Tier 1 & Tier 2) support to its customers. GTA also has immediate access to BellSouth's 24 x 7 Network Operations Center for Tier 3 support.

Function	GTA Contact	GTA Contact Info
Trouble reporting for network monitoring	Incident Management Group	24 x 7 reporting 404-463-3600
Trouble reporting for remote DSL users	GTA Solutions Support LAN Desktop Support	6:30 a.m. to 6:00 p.m. 404-749-2150

**Benefits/Advantages:**

The MPLS network is truly a statewide, fully meshed, secure network that accepts many types of access circuit choices; it is "network agnostic." Pricing for monthly service includes installation, access, maintenance, support, monitoring and built-in technology refresh. Upgrading services is easily accomplished. Conversion from legacy networks to MPLS technology is virtually transparent to the customer, and the results are easy to measure. MPLS is a robust and secure environment.

The MPLS network architecture allows customers to:

- Choose access circuit type and bandwidth speeds
- Communicate with any-to-any connectivity (fully meshed)
- Take advantage of MPLS's superior redundancy capabilities
- Choose which type of traffic has priority over other types of traffic

**How to Start this Service:**

Contact the GTA Office of Solutions Marketing at [gtasolutionsmrktg@ga.ga.gov](mailto:gtasolutionsmrktg@ga.ga.gov) or 404-651-6964 to be put in touch with your GTA Account Manager.

**Related Services and Products:**

- MPLS Remote Services (Telework initiatives)

**Terms and Definitions:**

24 x 7 — 24 hours a day, seven days a week, 365 days a year

ACLs – Firewall Access Listings (Access Control Lists)  
DSL — Digital Subscriber Line  
ISDN — Integrated Services/Digital Network  
MACDs – Moves, Adds, Changes and Deletions  
MPLS — Multi-Protocol Label Switching  
MTTR — Mean Time To Repair  
SLOs — Service Level Objectives  
VPN —Virtual Private Network  
NOSC — GTA Network Operations and Security Center

#### Other Information:

#### Service Level Objectives

<b>Core Availability</b>	GTA and BellSouth MPLS	24 x 7 99.999% percent
<b>Service Support</b>	MPLS Access Circuit	<ul style="list-style-type: none"> <li>24 x 7 support from GTA NOSC</li> </ul>
<b>Service Support</b>	Routine assistance and router repair	<ul style="list-style-type: none"> <li>Basic Service Level 6:30 a.m. – 6 p.m., Monday – Friday, including on-site repair</li> <li>All other times: “best effort” basis on router repair</li> <li>24 x 7 support from GTA NOSC</li> </ul>
<b>Monitoring</b>	All network elements are monitored and trouble tickets will be opened if a problem is detected	24 x 7 basis
	Network management tools provided to customer	24 x 7 basis
<b>Resolution time for incidents (Mean-Time-To-Repair)</b>	Emergency (major impact to users, network unavailable or not functioning)	Within four hours
	High (affects the users but workarounds are available; some functionality may be lost to the users)	Within four hours

	Medium (low impact to users)	"Best effort"
	Low (does not impact users)	No target
<b>Administrative process response time</b>	Acknowledgement of requests for MACDs (response to customer to confirm Service Order was received and accepted) - excluding weekends and holidays	Within 2 business days
	Installation interval for new service; Frame Relay, DSL access circuit types	30 calendar days (from time of properly prepared order)
	Installation interval for new service; ISDN, T-1 Private Line access circuit types	45 calendar days (from time of properly prepared order)
	Installation interval for new service; Metro Ethernet, D-3, OC-x access circuit types	<ul style="list-style-type: none"> <li>45 calendar days from time of properly prepared order</li> <li>90 calendar days for complex build out.</li> </ul>
	Relocation	6 weeks advance notification to GTA.
	Service window (use for planning purposes)	30 – 90 calendar days from time of properly prepared order to time service is available
	<p><i>Note regarding MPLS installation intervals during conversion project:</i></p> <p><i>When legacy-to-MPLS conversion project is complete, the standard intervals above take effect. Until complete, all installation intervals will be negotiated with each customer.</i></p>	

	New service address (new facilities, non-complex build out)	<ul style="list-style-type: none"> <li>45 calendar days for non-complex build out</li> <li>60 – 90 days for complex build out</li> </ul>
<b>Routine and emergency maintenance notifications</b>	Reserved service window	Sundays 7:00 a.m. - 11:00 a.m.
	Outage reports must be in the ServiceCenter and/or Georgia Remedy System	Within 2 hours
	Customer-initiated emergency maintenance must be reported	At least four hours in advance
	Scheduled maintenance must be reported (complex-possible service affecting multiples sites)	At least 48 hours in advance (weekends and holidays not included)
<b>Incident Management</b>	For routine incidents	GTA will follow MTTR practices to resolve all incidents within 48 hours, normal business days, Monday - Friday, 8 a.m. - 5 p.m. (specific MTTR applies for each access circuit type and MPLS core). If exceeded, applicable escalation procedures are followed.



	Prolonged event	GTA observes an objective of 10 minutes to allow the circuits to self-heal from a minor service disruption. If service is not restored in the allotted time, problem analysis begins and applicable escalation procedures are followed.
	During GTA standard hours of service, GTA and BellSouth technical support will update the Command Center regarding any incidents that cannot be resolved within the allotted SLA for access circuit type and MPLS core	Customer will be notified every hour, ½ hour, or 15 increments depending on the severity level and resolve time exceeded.
	During extended on-call hours of service, technical support will update the ServiceCenter and/or Remedy problem ticket	"Best effort"

### Features and Benefits of Managed vs. Unmanaged Router Service

<b>GTA/BellSouth MPLS</b>	<b>Managed</b>	<b>Unmanaged</b>	<b>Additional Benefits</b>
<b>Service Level Agreements (SLAs)</b>	<p>Service Level Agreements with GTA on:</p> <ul style="list-style-type: none"> <li>• MTTR (&lt;4 Hrs.)</li> <li>• Latency (&lt;80ms)</li> <li>• Packet Loss (&lt;2%)</li> <li>• Outage Notification (&lt;15 minutes)</li> </ul>	Only available for uptime, downtime on Private Line, Frame Relay and ATM. DSL has no SLAs for the local loop (target repair time is 48 hours after trouble is called in by customer).	GTA/BellSouth has contracted SLAs on each managed site, which prioritizes repair of managed sites before unmanaged sites.
<b>Network Management Reports</b>	<p>Web access to InfoVista reports on network utilization, packet loss, latency on access circuits to provide end-to-end views into network performance. Web access to Netcool alarms to view status of each circuit and router at each customer location. Access to trouble ticket reports.</p>	No access to reports.	BellSouth develops and maintains hardware, software and hosting of network management systems through GTA. Customer only needs web browser to access BellSouth Network Operations Center systems to validate and view information seen by BellSouth NOC.
<b>Router Maintenance</b>	BellSouth provides full break/fix maintenance, Cisco SMARTnet maintenance on routers for hardware and software including four-hour onsite repair maintenance.	Customer must pay for own maintenance of routers and fix all routers.	Customer has single point of contact for all site WAN issues. Eliminates finger-pointing among local network vendor, IXC network vendor, router vendor, customer router technicians, etc. BellSouth has full responsibility for repairs of all WAN services.
<b>Router configuration</b>	BellSouth stages, configures, project manages and installs all new routers	Customer will probably need to purchase,	Eliminates major projects for router installations and

	for MPLS services. All router configurations are stored and archived in the event of a router failure. Configuration updates required are handles by BellSouth including any additional hardware needed for IOS upgrades. BellSouth installs all hardware required for upgrades. Router configuration changes requested by customer performed by BellSouth within contracted timeframes. Configurations are stored in Cisco element managers that allow BellSouth to quickly backup and if necessary restore configurations to any managed device.	configure, install and coordinate installation of routers with BellSouth. New routers and/or WAN interface cards will be required for DSL if used at DOL sites. Any IOS upgrades required will be the responsibility of customer.	upgrades at all customer sites. BellSouth engineers are experienced with MPLS implementations.
<b>Quality of Service (QoS) for Voice/Video</b>	BellSouth will configure routers properly to support QoS for voice, video, mission-critical applications. BellSouth requires managed routers for sites needing QoS to commit to providing service level guarantees.	Customer will need to properly configure, manage and support routers for QoS. Issues with latency, jitter and packet loss causing poor quality of voice and video transport will be the responsibility of customer if the network appears to be operating properly.	BellSouth does not recommend any QoS on unmanaged sites, as BellSouth would have no way to validate and track issues end-to-end. BellSouth deploys probe technology on each router to continuously view QoS metrics on managed sites. Alarms are generated when SLA metrics are violated to ensure proper QoS for voice and video.
<b>Proactive Monitoring of Service Degradation Prior to Outage</b>	GTA/BellSouth provides total trouble isolation and resolution (transport, core network and inside the router itself). BellSouth will begin proactively	GTA/BellSouth will only see up/down status of Unmanaged sites with either Frame Relay or	Customer will have to contact GTA when a site goes down or service degrades. Little can be done with sites where

<b>Occurring</b>	troubleshooting issues related to service degradation before an outage occurs. Examples include processors becoming over-utilized, buffer overloads reaching certain thresholds or latency exceeding certain thresholds. These metrics often indicate issues about circuit problems prior to an outage.	Private Line Services. No additional metrics are captured that would indicate service degradation prior to a site being out.	service is degrading for unmanaged sites, since no metrics will exist on the access circuit or router.
<b>Proactive Notification and Repair of DSL Sites</b>	BellSouth will proactively alarm and repair DSL sites if DSL goes down or service degrades.	BellSouth has no visibility into DSL outages until the customer calls to open a ticket.	Significant time is lost for DSL sites when they go down.
<b>Out-of-band Management</b>	BellSouth uses out-of-band modems and phone lines to troubleshoot router issues remotely, should service degrade or a site is out of service. GTA provides lines and extends demarcations to router rooms. BellSouth installs and maintains modems at each site. BellSouth tests out-of-band modem lines quarterly to ensure lines are installed, operational and not attached to other devices at the site causing management issues.	Customer must maintain and test out-of-band modem lines at each site if desired.	Provides secondary method of managing sites in the event of outage and includes auditing of sites to ensure out-of-band connectivity.